

Monitoring Farm Runoff to Evaluate Conservation Practices



Services / Expertise

Agricultural Conservation Practice Evaluation
Edge-of-Field Monitoring

Markets

State Government
Conservation Districts
Watershed Protection Organizations

Project Locations

Charlotte, Vermont
Ferrisburgh, Vermont
Franklin, Vermont
Pawlet, Vermont
Shelburne, Vermont
Shoreham, Vermont
Williston, Vermont

Project Duration

2015 – 2018

Project Owner

2015-2017: The Lake Champlain Basin Program
2012-2015: Vermont Agency of Agriculture

Project Manager

Dave Braun
dbraun@stone-env.com



Edge-of-field monitoring station used to evaluate agricultural runoff and impacts to water quality.

AGRICULTURE has been identified as a major contributor of phosphorus (P) to Lake Champlain. Although farmers and federal and state resource conservation programs have made unprecedented investments in implementing agricultural conservation practices in the Lake Champlain Basin, these efforts have not yielded desired water quality results. Better information is needed regarding the effectiveness of agricultural conservation practices so that the most effective practices are encouraged and authorities can provide reasonable assurance that plans to achieve Lake Champlain's EPA-mandated phosphorus-reduction targets will be successful.

In 2012, Stone began an edge-of-field runoff monitoring program for the Vermont Agency of Agriculture, Food, and Markets (VAAF), in partnership with USDA-NRCS, to generate critical data on the effectiveness of several conservation practices these organizations are promoting for reducing nutrient and sediment pollution in farm runoff. Funding for this program was provided by the NRCS, the State of Vermont, and the Lake Champlain Basin Program.

Stone continuously monitored 16 stations on seven farms in the Lake Champlain Basin. We used a paired watershed study design to test the effects of five conservation practices on pollutant concentration and loading in surface runoff from corn and hay fields. The practices we evaluated included a grassed waterway, soil aeration, cover cropping, reduced tillage with manure injection, and a water and sediment control basin treating cornfield runoff.

This study yielded accurate estimates of pollutant reductions achievable by several conservation practices in Vermont, as well as potential modifications to improve their performance.